Distributed Planning

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Abstract

Subject Terms

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Presentation theme:

Despite £M's spent on planning systems why is planning usually conducted by military staff meeting around a table and using a combination of pen/paper, whiteboards and MS Office?

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Agenda

- What is Planning?
- Why is supporting Planning difficult?
- Issues for current Planning support systems
- Why are 'low-tech' solutions in evidence?
- Recommendations for supporting Planning

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Most people would agree that Planning...

- Is a complex, human-directed process
- Is driven by goals, requirements & constraints of a given campaign
- Involves
  - receipt and understanding of direction & guidance
  - decision-making & human judgement
  - communication & collaboration amongst groups of experts in their individual fields
  - development of common understanding, awareness and intent

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Planning is...

- A process specified in doctrine and SOPs
- A complex group activity
- A design/problem-solving activity
- An example of decision-making grounded by judgement and experience

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PS Functional Reqts Concept - 4 Layers

TOOLS	Task-oriented requirements, describing support required by specific divisions
FORMATS	Reqts for flexible, user-defined representations of planning info, to support group and coalition working
MGT	Reqts for support in managing collaborative processes and their products
INFO	Reqts on access to / the provision of information by other parties

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Computers don’t naturally fit the problem

Planning	Computers
• Knowledge intensive	• handle data/information
• Complex & multi-faceted	• best in pre-defined domains
• Each plan & planning process is unique	• During application development it is easier to prescribe a process
• Planning, monitoring and re-planning is dynamic	• Dynamic variables are defined in advance

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Systems Engineering is non-trivial

- Knowledge elicitation/task analysis is difficult
- Limited access to users
- Littoral, linear descriptions of processes
- Doctrine doesn't convey flexibility of processes
- Interpretation is often too-littoral
- Access to products-in-progress is difficult
- Emphasis placed on products rather than processes

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Current Planning support systems

- Tools mainly support op/tactical domains
- Emphasis placed on finding discrete, localised solutions & implementation
- Limited attention paid to
  - Problem framing and understanding
  - Plan monitoring and maintenance
- Emphasis on process/activities rather than problem solving

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Technology-drive/narrow-focus leads to

- Passive experts
- Reduced adaptability
- Hidden mechanisms & logic
- Data push rather than interpretation
- Style over function
- Data deluge

[Klein 2001]

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So why is MS Office so popular?

- Process neutral
- Full inter-application integration
- Pervasive & familiar
- Applications are user-experience scalable

It demonstrates key characteristics of an appropriate support technology

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Q: £M's, A:?

- Current enterprise-wide planning systems are constraining, inflexible, stultifying and generally inappropriate
- Round-table discussions, MS Office & Whiteboarding meets a significant proportion of user requirements!
- Majority of investment targeted at specific, discrete planning aids (solution finding) at the operational/tactical level
- The complexity and knowledge intensive nature of planning is hard to define in concrete requirements terms

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Message based on 5+ yrs research

- ARP 19k then ARP 13
- AI Planning approaches through to Process and Info Management solutions (PlanMan)

- Main problem with PlanMan was process-product disjoint

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Functional Reqts - 4 Layers examples

TOOLS	e.g. textual, temporal and spatial planning, re-planning and planning for contingencies
FORMATS	e.g. process description, plan description, product templates (briefings, documents), task checklists
MGT	e.g. product mgt, process mgt, group brainstorming and authoring; plan reuse, decision traceability
INFO	e.g. staff status, status of Op resources, geo, int, log, financial, historical, open-source, etc.

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Recommendations

- Focus on enabling technologies
  - tools that a target organisation can evolve and maintain
  - framework applications
- De-couple logic and process from core systems
  - do not hardwire or prescribe
- Harness OO techniques for user not just developer benefit
  - Interfaces that directly manipulate business objects
  - OO for organisational agility not re-use
- Understand what doesn't change

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Recommendations

- Focus on group decision-making
  - human factors does not just mean GUI design
  - Planning environments must be collaborative
- Allow support and (multiple) representation(s) of processes and products - and the means to translate
- Shift emphasis from process support to problem solving
- Support full planning spectrum - crisis thro' deliberate
- Discrete (integrable) solutions are necessary

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Software Engineers - Remember...

Planning is a complex, dynamic, flexible, human-directed group activity

Technology can help if employed appropriately

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Questions?

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